Director of
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Intelligence

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Use of Toxins and Other Lethal Chemicals in Southeast Asia and Afghanistan

Special National Intelligence Estimate
Volume I—Key Judgments

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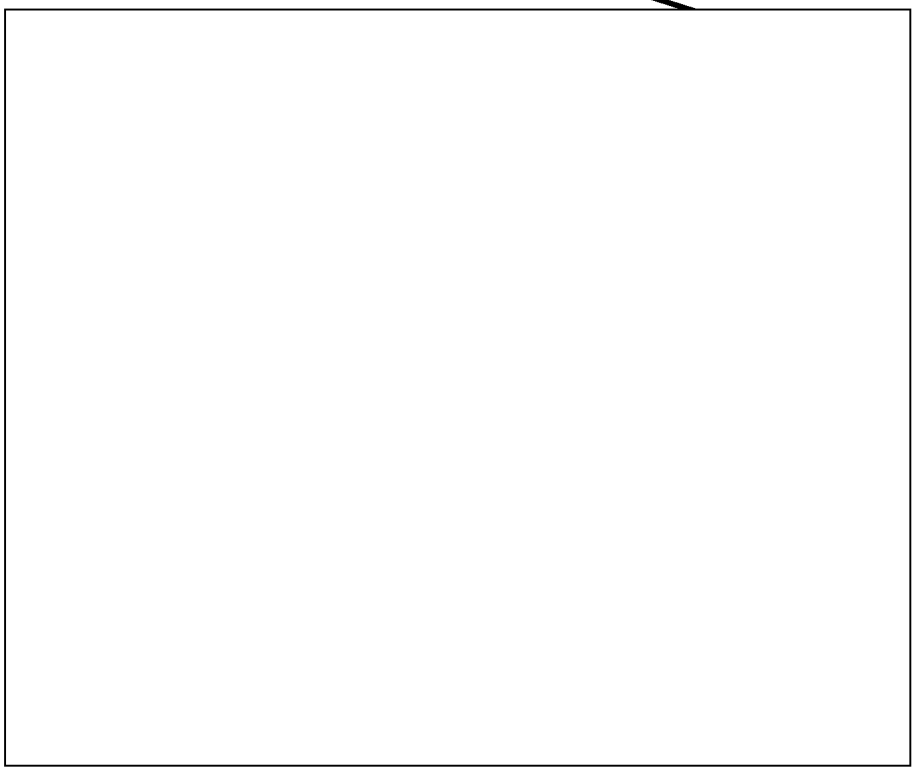

CONTENTS

	Page
SCOPE NOTE	1
KEY JUDGMENTS	3
DISCUSSION	5
Background	5
Methodology	5
Laos	6
Kampuchea	11
Afghanistan	13
What Chemical Agents Are Being Used?	16
Soviet Chemical Warfare Activities	19
The Yemen Experience	20
CONCLUSIONS	21
IMPLICATIONS	23

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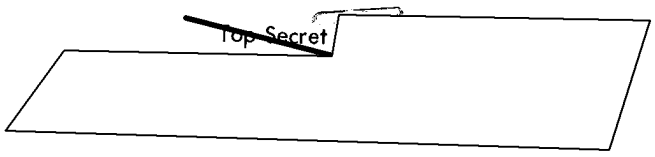

SNIE 11/50/37-82

USE OF TOXINS AND OTHER LETHAL CHEMICALS IN SOUTHEAST ASIA AND AFGHANISTAN

Volume I—Key Judgments

Information available as of 27 January 1982
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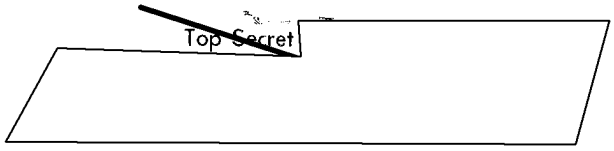

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THE NATIONAL FOREIGN INTELLIGENCE BOARD CONCURS.

The following intelligence organizations participated in the preparation of the Estimate:

The Central Intelligence Agency, the Defense Intelligence Agency, the National Security Agency, and the intelligence organization of the Department of State.

Also Participating:

The Assistant Chief of Staff for Intelligence, Department of the Army

The Director of Naval Intelligence, Department of the Navy

The Assistant Chief of Staff, Intelligence, Department of the Air Force

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SCOPE NOTE

This Estimate presents the results of an intensive review by the US Intelligence Community of all available evidence on chemical warfare activities in Laos, Kampuchea, Vietnam, and Afghanistan. It also takes a brief second look at intelligence holdings on the 1963-67 Yemeni civil war and at the Soviet chemical-biological warfare program. The Estimate does not consider the arms control and disarmament aspects of the problem, nor does it examine in any depth the threat implications flowing from the employment of chemical weapons in local conflicts. (U)

While the Intelligence Community is confident of the key judgments which follow, many uncertainties remain concerning the full scope of Soviet activities in the chemical-biological warfare sphere, particularly the USSR's research and development program. (U)

This volume presents the basic Estimate. Volume II, published separately, contains a large amount of supporting data and analysis on the subjects covered in volume I. Volume II also includes a series of technical annexes that provide tabulations of reported attacks, details on the sample analyses, a technical description of trichothecene toxins, a bibliography of Soviet publications on these toxins, and other supporting documents. (U)

KEY JUDGMENTS

Laos

Lao and Vietnamese forces, assisted by Soviet logistics and supervision, have used lethal chemical agents against H'Mong resistance forces and villages, causing thousands of deaths since at least 1976. Trichothecene toxins have been positively identified as one of the classes of agents used, but medical symptoms indicate that irritants, incapacitants, and nerve agents also have been employed. (U)

Kampuchea

Vietnamese forces have used lethal trichothecene toxins on Democratic Kampuchean troops and Khmer villages since at least 1978. Again, medical symptoms indicate that irritants, incapacitants, and nerve agents also have been used. (U)

The Soviet Role in Southeast Asia

The one hypothesis that best fits all the evidence is that the trichothecene toxins were developed in the Soviet Union, provided to the Lao and Vietnamese either directly or through transfer of technical know-how, and weaponized with Soviet assistance in Laos, Vietnam, and Kampuchea. There is no intelligence at hand to support alternative explanations, such as completely independent manufacture and use by the Vietnamese. It is highly probable that the USSR also provided other chemical warfare agents. While the evidence on the Soviet role does not constitute proof in the scientific sense, the Intelligence Community finds the case to be thoroughly convincing. (U)

Afghanistan

Soviet forces in Afghanistan have used lethal and casualty-producing agents on Mujahedin resistance forces and Afghan villages since the December 1979 invasion. There is some evidence that Afghan Government forces may have used chemical weapons provided by the USSR against the Mujahedin even before the invasion. No agents have been identified through sample analysis, but we conclude from analysis of all the evidence that attacks have been conducted with irritants, incapaci-

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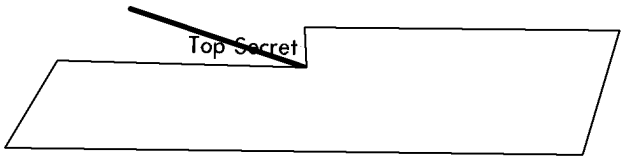
tants, nerve agents, phosgene oxime, and perhaps trichothecene toxins, mustard, lewisite, and unidentified toxic smokes. (U)

Yemen

Egyptian forces, with Soviet participation, conducted chemical attacks in Yemen between 1963 and 1967. The striking similarities to the subsequent chemical attacks in Laos, Kampuchea, and Afghanistan, plus the substantial evidence collected at the time, lead us to suspect that trichothecene toxins were used.

Implications

Our review of the chemical warfare evidence has yielded three findings with serious implications that need to be reflected in future threat estimates: (1) The Soviet Union has a well-developed program for the employment of chemical and toxin weapons. (2) The Soviet military consider the employment of chemical weapons by their forces and those of their allies to be an acceptable and effective means of suppressing resistance even in local wars. (3) There is a growing sense of alarm in countries like Thailand, Pakistan, and China in contemplating conflict with Soviet client states, and there is international concern that lethal chemical weapons may become an accepted method of warfare in limited conflicts throughout the Third World.



DISCUSSION

Background

1. In September 1981 the US Government in a public declaration raised the probability that the trichothecene class of toxins [1]—poisonous chemical substances extracted from biological material (specific molds)—was the mysterious lethal agent that had been used for many years in Laos and Kampuchea. This significant statement was precipitated by the discovery of high levels of trichothecene toxins in a vegetation sample collected shortly after a March 1981 Vietnamese chemical attack in Kampuchea. That public declaration, however, rested on a much broader base of evidence than the analysis of that sample. (U)

2. In April 1980 the Intelligence Community had already concluded (see volume II, annex F) that lethal agents had almost certainly been used against H'Mong tribespeople in Laos. There was less reliable evidence about the use of lethal agents in Kampuchea, mainly because of suspicions about the propaganda campaign of Pol Pot's Democratic Kampuchean (DK) forces. The DK claims were subsequently shown to be valid. It was also concluded that chances were about even that lethal agents had been used in Afghanistan. There was little doubt by this time that riot control agents and some form of incapacitants had been used in all three countries, although not specifically mentioned in the April 1980 assessment. Since mid-1980, sufficient additional evidence has allowed a much firmer Intelligence Community judgment than that stated in the April assessment. There is now no doubt that deaths and casualties have resulted from chemical attacks in all three countries. (U)

[1] Trichothecene toxins, like all other toxins, are chemical compounds derived from biological material. For purposes of this Estimate, toxins are characterized as chemical warfare agents. Their manufacture, however, would most likely take place in biological warfare facilities, even if the toxins were synthetically produced. (U)

3. Analysis of additional samples from Laos and Kampuchea has revealed at least four trichothecenes, further supporting our conclusion that toxins were used. A review of all the reports indicates the use of many different chemical agents, means of delivery,and types of chemical attacks. In some cases, the symptoms are typical of those caused by trichothecenes, but in many cases the symptoms suggest other agents, which we have not been able to identify through sample analysis. Significant differences as well as similarities have surfaced in the reports from the three countries. The evidence from each country, therefore, is described separately, with attention drawn to similarities where appropriate. A section on the 1963-67 civil war in Yemen is included (see volume II, chapter VI) because of the striking similarities between the chemical warfare activities reported during that conflict and what has been observed in Southeast Asia and Afghanistan. (U)

Methodology

4. The intelligence judgments of this study were arrived at through the following analytic process:

- Every relevant piece of information on reported chemical warfare incidents was reviewed, recorded, and tabulated (see volume II, annex A). Numbers of attacks and deaths were screened for potential duplication. The process included reports not only on Southeast Asia and Afghanistan, but on Yemen as well. An extensive data base on the Soviet chemical and biological warfare program was also searched.
- All the physical evidence available to the US Government—including environmental samples and background controls—was reviewed (see volume II, annex B).
- A scientific report on toxins was prepared, including the analysis leading to the conclusion

that trichothecenes were probably among the agents used in Southeast Asia. The report also documents the extensive toxin research conducted in the USSR (see volume II, annex D).

— An analysis of the medical evidence was prepared, drawing on all available information from Southeast Asia and Afghanistan (see volume II, annex E). This incorporated the findings of the Department of Defense medical team (see volume II, annex C), which concluded that at least three types of agents were used in Laos.

— Extensive consultations were held with government and nongovernment scientists and medical authorities, many of whom were asked to review our evidence. Experts from other countries were also consulted. (U)

5. After the data base was organized to permit comparative analysis, the study focused on three separate questions:

— Have lethal and other casualty-producing agents been used in Southeast Asia and Afghanistan?

— What are these agents and how and by whom are they employed?

— Where do these agents originate and how do they find their way to the field? (U)

6. Although the evidential base differs for each country, the analytic approach used was the same. The testimony of eyewitnesses—date, place, and type of attack—was matched against information from defectors, journalists, and international organizations and sensitive information that often pinpointed the time and place of chemical attacks. In addition, the intelligence files on military operations in the areas where chemical attacks had been reported were searched to establish whether air or artillery strikes took place or whether there was fighting in the areas where chemical agents were reportedly used. In all three countries, we identified a number of instances in which eyewitness accounts could be correlated with information from other sources. (U)

7. There is no evidence of any systematic propaganda campaign having been mounted by the H'Mong or the Afghan resistance forces to promote the allegation that chemical agents have been used on their people. Rather it was the US Government, other governments, and private individuals from many countries that publicized the use of chemical agents and that provided the evidence to international organizations. On the other hand, there were early indications that Pol Pot's Democratic Kampuchean resistance did engage in an organized propaganda campaign on chemical agent use. These indications made us very cautious about accepting DK allegations, which increased markedly after the chemical attacks in Laos were publicized. For Kampuchea, therefore, we were particularly insistent in our efforts to confirm allegations made with sources of information that in no way could be part of a propaganda or deception campaign. (U)

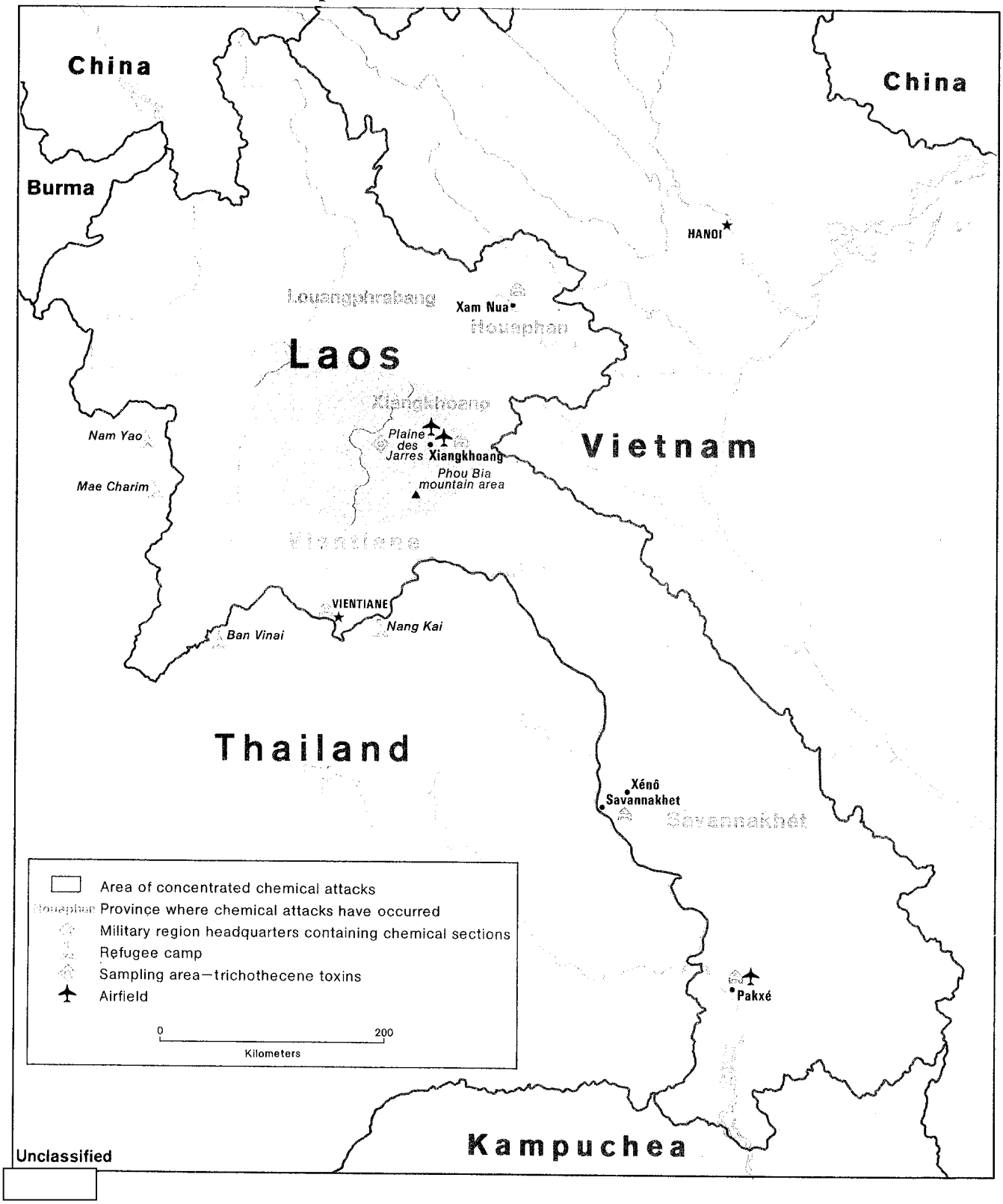
Laos

8. Reports of chemical attacks in Laos date from the summer of 1975 to the present. These reports describe 261 separate attacks in which at least 6,504 deaths were cited as having resulted directly from exposure to chemical agents. (U)

9. The actual number of deaths is almost certainly much higher, because the figure above does not take account of deaths in attacks for which no specific casualty numbers were reported. The greatest concentration of reported use of chemical agents occurred in the area where the three provinces of Vientiane, Xiangkhoang, and Louangphrabang adjoin (see map, figure 1). This triborder region accounted for 77 percent of the reported attacks and 83 percent of the chemical-associated deaths. Most of the reported attacks took place in 1978 and 1979. In the past two years, reporting has indicated a low level of chemical activity but continuing high death rates among unprotected and untreated victims—only seven chemical attacks were reported in the fall of 1981, for example, but 1,034 deaths were associated with those incidents. (U)

10. With very few exceptions, these reports are from HUMINT sources, particularly from H'Mong refugees. One exception is

Figure 1
Laos: Chemical Warfare Operational Areas



an attack that took place at the village of Na Nhao, in Vientiane Province, on 14 May 1981. According to a Lao People's Liberation Army (LPLA) report to provincial headquarters in Vientiane on 21 May 1981, the local people had reported that a helicopter had flown over the village and dropped poisons on 14 May. On 31 May an LPLA report to Vientiane confirmed that an unidentified aircraft had dispersed toxic chemicals in the village area, "poisoning large numbers of villagers." The villagers were still sick as of the time of that report. It is also clear that certain Lao field units were not aware that chemical attacks were being conducted. In June 1981 a group of ethnic Lao refugees from Na Nhao reported that a helicopter from Vientiane had dropped "poison" into the stream near their village.

11. One possible explanation for the difficulty in obtaining corroborative data for Laos may simply be the nature of the fighting there. There have been few major operations. Rather, the reports reflect numerous minor engagements between the opposing forces, and results of these encounters are rarely reported. This is consistent with the observation that the resistance forces are splintered, operating in small, discrete units that emphasize sabotage and unconventional warfare. Finally, in nearly all cases, the chemical use reported has been directed against villages, in the absence of obvious combat operations. This substantiates a Lao pilot's claim that the Vietnamese and Laotian military commands were engaged in a "H'Mong extermination" campaign. (U)

12. Of particular interest are the circumstances surrounding the collection of two physical samples that were found to contain lethal toxins. The first sample was collected after a 13 March 1981 attack on a village between the villages of Muony Chai and Phakhao in the Phou Bia region. In this case, a large two-engine plane reportedly sprayed a mist of a moist, yellow, sticky substance; two villagers and all village animals died. The second sample is from Ban Thonghak, another village in the Phou Bia region. That sample was collected following a 2 April 1981 attack in which a jet aircraft reportedly sprayed a yellow substance; 24 of the 450 villagers died. Seven separate chemical attacks, resulting in 218 deaths, were reported to have occurred in this region in the spring of 1981. (U)

13. It is significant that these attacks took place following a period of escalation in overall resistance activities in the Phou Bia area in the winter of 1980-81. During that period, joint suppression operations by LPLA and Vietnamese Army (PAVN) forces had achieved only limited success, perhaps spurring both forces on to greater effort. The more intense use of chemical weapons may have been part of this effort. (U)

14. Every qualified interrogator who systematically interviewed the H'Mong refugees concluded that the latter had been subjected to chemical attacks. For example, the US Government medical team returned from Thailand in 1979 convinced that several unidentified chemical warfare agents had produced the symptoms described by the refugees. It was the testimony of a Lao pilot who flew the chemical warfare missions that helped dispel any lingering suspicions that the refugees had fabricated or embellished the stories. His detailed description of the Lao, Vietnamese, and Soviet program to defeat the H'Mong resistance with chemical agents appears in volume II, chapter I. (U)

15. The Lao pilot described the chemical rocket he had fired as having a more loosely fitting warhead than a conventional rocket. In 1977 a H'Mong resistance leader found a US 2.75-inch rocket with a modified Soviet warhead that fits this description. In further corroboration, a reliable Thai source reported that US 2.75-inch rockets were fitted with lethal chemical warheads by Soviet and Vietnamese technicians at facilities in Vientiane as well as in Xiangkhouang and Savannakhet Provinces. (U)

16.

The Phongsavan airfield probably was a major staging area for chemical attacks.

Kampuchea

17. For Kampuchea we have reports of 124 separate attacks, from 1978 to the present, in which lethal chemicals caused the deaths of 1,014 individuals. Here again, the mortality figure represents a minimum because some reports state only that there were deaths and do not provide a number. The earliest reports cite attacks in Ratanakiri Province, in the northeastern corner of the country (see map, figure 3). Reports from 1979 to the present show the use of lethal chemicals primarily in the provinces bordering on Thailand. The greatest use of chemical agents apparently has been in Battambang Province (51 reported incidents); Pursat Province has suffered the next highest frequency, with 25 reported incidents. These numbers are consistent with the overall high level of military activity reported in the border provinces. (U)

18. Information regarding 35 of the reported 124 chemical attacks was provided by HUMINT sources.

A review of intelligence reports from all sources provides direct and specific support for 28 of these attacks. There is, in addition, some circumstantial evidence that in all reported instances some form of attack took place. This evidence includes reports of troop movements, supply transfers, operational plans, postoperation reporting, and air activity reports. It

indicates that military activity took place at the time and place of every incident reported to involve lethal chemical agents. In some cases, it provides strong circumstantial indications that the action involved chemical substances—for example, the movement of chemicals and personal protection equipment in the area.

19. In early 1980, Thai intelligence concluded that the Vietnamese were conducting chemical attacks with mortars, artillery, and grenade launchers as well as with aircraft.

20. Of particular interest are those incidents from which have come the samples—physical evidence. A

collected vegetation and water samples from an area south of Phnom Mak Hoeun, a village in the Thailand-Battambang Province border area after receiving reports of lethal agents being used from 10 to 15 March 1981. Not only were the samples collected within hours after the attack, but paramedics performed field autopsies on the bodies of DK soldiers.

The autopsy descriptions of the condition of the internal organs are consistent with trichothecene poisoning.

21. US analysis of contaminated vegetation samples from the March 1981 attack showed high levels of three trichothecene toxins in a combination that we would not expect to be found in a natural outbreak in this environment. These three trichothecenes at the levels found on the vegetation would produce the vomiting, skin irritation and itching, and bleeding symptoms. Water samples taken from the area of the same attack also contained trichothecene toxins. Control samples from nearby areas confirmed that these toxins are not indigenous to the locale. (Details on the sample analysis appear in volume II, annex D, and the medical analysis is in volume II, annex E). (U)

22. There is also ample evidence of military activity at the place and time of the acquisition of the Thai sample. PAVN defectors described plans for multiregimental sweep operations to be conducted along the border in northwestern Battambang Province before the end of the dry season in May. Actual fighting, however, continued to be characterized by guerrilla tactics on both sides, including, according to one

Figure 3
Kampuchea: Chemical Warfare Operational Areas

PAVN defector, "staging ambushes, laying minefields, and use of deception." Indeed, DK forces were ordered to avoid large-scale operations, to limit combat operations to scattered sapper attacks. Such information is consistent with DK and Thai reports of PAVN forces spreading toxic chemicals along streams and roadsides and around villages, and firing toxic gas shells against enemy positions.

23. In Kampuchea as in Laos, the period of late 1980 through spring 1981 was one of intensified Vietnamese operations to suppress the resistance, and the Vietnamese may have considered the use of toxins an effective means of breaking the will of the opposing forces. (U)

24. Additional supporting evidence was derived from blood samples drawn from victims of PAVN chemical use that reportedly occurred on 19 September 1981 in the Takong area. (Blood analysis appears in volume II, annex D.) Takong is in the same general area as Phnom Mak Hoeun—that is, the central region of the Battambang Province–Thailand border. Again, there is no independent confirmation of the accounts of the attacks, but US medical personnel visiting the DK field hospital examined the victims and obtained blood samples. Analysis of these samples suggested the use of tricothecenes.

25.

26. The chemicals used in the 19 September Takong attack were dispersed (according to the DK soldiers affected) as a gas or powder, and as a poison to water. The gas or powder was released from containers by tripwires in the area of the rear forces. This description is consistent with the other reporting for this area and time. (U)

27.

28. In sum, substantial evidence on the Vietnamese use of chemical weapons existed before the discovery of trichothecene toxins in vegetation and water samples. The Thai have developed a substantial data base on the chemical attacks,

The Thai's concerns about chemical attacks against their own people have increased, especially after one Thai died and others became ill from Vietnamese poisoning. In May 1981 the Thai captured two Vietnamese in the act of poisoning water with cyanide in a Thai relocation camp.

Afghanistan

29. Attacks with chemical weapons against the Mujahedin in Afghanistan were reported as early as six months before the Soviet invasion on 27 December 1979. Five separate chemical attacks in this preinvasion period were reported in eastern Afghanistan, but the evidence for this period is inconclusive. The reports specify only that Soviet-made aircraft were used, with no clear identification of Soviet or Afghan pilots, or of the specific agents used.

A number of Afghan military defectors stated, nevertheless, that the Soviets

provided the Afghan military with chemical warfare training as well as supplies of lethal and incapacitating agents. The Afghan reference to "microbe bombs" is still unexplained.

30. For the period from the summer of 1979 to the present, we have reports of 43 separate chemical attacks with more than 3,000 chemical-associated deaths (see map, figure 4). Ten separate chemical attacks, killing considerable numbers of persons, were reported in the first three months of 1980. All of the reports came from northeastern Afghanistan and provide the highest percentage of reported deaths. By the spring and summer of 1980, chemical attacks were reported to have occurred in all areas of concentrated resistance activity. Reports of chemical weapon use in 1981 essentially parallel 1980 reporting with respect to frequency and location of attack. Of the 43 chemical attack reports, 36 have come from human sources, including Afghan Army deserters, Mujahedin resistance fighters, journalists, and US physicians. For 24 of the reported 43 attacks we have additional independent evidence supporting allegations of chemical attacks. In seven instances we have additional human reporting. For example, an Afghan insurgent provided an eyewitness account of a 6 July 1980 attack on a village 10 kilometers east of Darae Jelga in Vardak Province. The insurgent reported that a Soviet MI-24 helicopter gunship dropped a bomb that, upon explosion, released a lethal chemical. A separate report from a reliable source confirmed that Soviet aerial bombing attacks were taking place during this period on villages in Vardak (as well as Lowgar and Parvan Provinces).

31. In most cases the connections are circumstantial, as when Soviet or Afghan Army combat operations are described as being planned or are in progress in areas at times approximating those of a reported chemical attack. In a few cases, reporting is more specific. The following sequence, for example, occurred in a small valley in Qandahar Province in early June 1981: Soviet combat troops engaged rebel forces in that valley during a two-week period, according to an Afghan exile The Afghan exile reports that a Soviet helicopter delivered a single rocket, which released a chemical that killed 16 insurgents.

32. Nearly all reports state that chemicals were delivered by aircraft or helicopters, with a few reports describing chemical artillery rounds. These operations frequently occurred at the same time and place as reported chemical attacks.

33. The evidence that Soviet forces are using lethal chemical agents comes from HUMINT reporting.

34. strongly support the use of irritants to drive the insurgents into the open to expose them to attack with conventional weapons and incapacitants to render them tractable for disarming and capture.

35. Victims of Soviet attacks, conducted to flush them from caves, describe symptoms that cannot be associated with riot control agents like CN and CS or even Adamsite. Medical examinations of some of the victims include reports of paralysis, other neurological effects, blisters, bleeding, and sometimes death. While none of the agents being used in Afghanistan have been positively identified through sample analysis, it seems clear that the agents being used are far more toxic than the irritants cited above. (U)

36. A reliable source has provided a list of the Soviet agents stockpiled in Afghanistan and described where and when some of them have been used. The list included nerve agents, phosgene, phosgene oxime,

Figure 4
Afghanistan: Chemical Warfare Operational Areas

sulfur mustard, nitrogen mustard, and lewisite. The agents used, plus the time and location of the attacks, generally correspond to the refugee reports and recorded military operations. Afghan military defectors have also described the agents being used by the Soviets and pinpointed where they are stored.

37. operational personnel decontamination stations at two locations in Afghanistan and a chemical decontamination field unit deployed during a sweep operation of the Konar Valley in 1980. In addition, Soviet personnel have been observed wearing chemical protective equipment. At Shindand, TMS-65 decontamination units were deployed in a classical operational mode This suggests that the chemical battalions have performed an operational role in Afghanistan connected with offensive chemical use. A Soviet chemical officer told an American news correspondent that his mission was to examine villages after a chemical attack to determine whether it was safe to enter or required decontamination. An Afghan pathologist who defected described how he accompanied Soviet chemical warfare personnel into contaminated areas to collect soil, vegetation, and water samples after Soviet chemical attacks. There are at least some firsthand reports from former Soviet chemical personnel that it is not Soviet practice to require decontamination equipment to be stationed in an area where chemical bombs are stored or loaded on aircraft. If this is correct, it suggests that the operational deployment of this equipment in Afghanistan is associated with the active employment of casualty-producing chemical agents.

38. In sum, the eyewitness testimony of Afghan refugees and journalists about chemical warfare activities is supported by defectors, as was the case in Laos and Kampuchea. evidence that chemical agents have been used, though it does not identify the type. evidence on Afghan and Soviet military operations leaves no doubt that fighting took place in almost every area where we have HUMINT reports of chemical attacks.

What Chemical Agents Are Being Used?

39. The specific chemical agents being used in Laos, Kampuchea, and Afghanistan cannot be determined without collection and analysis of at least one of the following: environmental samples contaminated with agent, the munitions used to deliver agents, or biological specimens from victims of an attack. A study by medical-toxicological experts of symptoms exhibited by individuals exposed to toxic agents does provide a good indication of the general class of chemical agent used. Thus, the range of clinical manifestations from chemical agents as reported by a US Army investigative team resulted in the determination that nerve agents, irritants such as CS, and a highly toxic hemorrhaging chemical or mixture of chemicals were used in Laos. Other medical-toxicological personnel arrived at the same determination and further indicated that toxins such as the trichothecenes were a probable cause of the lethal hemorrhaging effect seen in Kampuchea as well as Laos. Symptoms reported by the DK in Kampuchea and the Mujahedin in Afghanistan were in many cases similar to those reported by the H'Mong in Laos. In addition, symptoms reported from Afghanistan and Kampuchea indicated that a highly potent, rapid-acting incapacitant "knockout" chemical also was being used. Mujahedin victims and witnesses to chemical attacks reported other unusual symptoms, including a blackening of the skin, severe skin irritation with multiple small blisters and severe itching, severe eye irritation, and difficulty in breathing—suggesting that phosgene oxime or a similar substance was used. (U)

40. Collecting samples possibly contaminated with a toxic agent during or after a chemical assault is difficult under all circumstances but particularly when the assault is against ill-prepared people without gas masks and other protective equipment. Obtaining contaminated samples that will yield positive traces of specific chemical agents is dependent on a number of factors. These include the persistency of the chemical, the ambient temperature, rainfall, wind conditions, the media on which the chemical was deposited, and the time, care, and packaging of the sample from collection to analysis in a laboratory. Many standard chemical warfare agents are nonpersistent and disappear from the environment within a few minutes to

several hours after being dispersed. These include, for example, the nerve agents sarin and tabun; the blood agents hydrogen cyanide and cyanogen chloride; the choking agents phosgene and diphosgene; and the urticant phosgene oxime. Other standard CW agents—such as the nerve agents VX and thickened soman and the blistering agents sulfur mustard, nitrogen mustard, and lewisite—may persist for several days to weeks depending on weather conditions. The trichothecene toxins have good persistency but may be diluted to below detectable concentrations by adverse weather conditions. To maximize the chances of detection, sample collections should be made as rapidly after a chemical assault as possible, and with many agents this means minutes to hours. Under the circumstances of Southeast Asia and Afghanistan this has simply not been possible. While numerous samples were collected, few of them held any realistic prospect of yielding positive results. It is fortunate that trichothecenes are sufficiently persistent to allow detection several months after the attack. (U)

41. Samples have been collected from Southeast Asia since mid-1979 and from Afghanistan since May 1980. To date about 50 individual samples—of greatly varying types and usefulness for analytical purposes—have been collected and analyzed for the presence of traditional CW agents, none of which have been detected. On the basis of recommendations by medical and toxicological experts and of findings by the CSL, many of the samples have been analyzed for the trichothecene group of mycotoxins. Four samples, two from Kampuchea and two from Laos, were found to contain high levels of trichothecene toxins. Preliminary results of several additional samples indicate the presence of trichothecenes or their metabolites, but quantification of their levels is pending. Details concerning the samples, including the circumstances of their collection, the analysis, and the results, are provided in volume II, annex B. (U)

42. The accompanying table lists the chemicals and their probability of use in Afghanistan by Soviet and, in Southeast Asia, by Vietnamese and Laotian forces. The judgments shown in this table are based on sample analysis, on collateral and special intelligence, and on medical and toxicological evaluations. (U)

Degrees of Confidence in Identification of Specific Classes of Chemicals Used in Southeast Asia and Afghanistan [a]

	Laos	Kampuchea	Afghanistan
Trichothecene toxins	Confirmed	Confirmed	Suspected
Nerve agents	Probable	Probable	Probable
Irritants	Probable	Probable	Probable
Vesicants and urticants	Suspected	Suspected	Probable
Incapacitants	Suspected	Probable	Probable

[a] The confidence levels shown refer to the identification of specific chemicals used, not to the probability that some form of lethal chemical was used. We consider the latter a certainty.

This table is unclassified.

Soviet Chemical Warfare Activities

43. Evidence accumulated since World War II clearly shows that the Soviets have been extensively involved in preparations for large-scale offensive and defensive chemical warfare. We have identified the chemical warfare agents and delivery systems they have developed, probable production and storage areas within the USSR, and continuing research, development, and testing activities at the major Soviet chemical proving grounds. None of the evidence indicates any abatement in this program. The Soviets have shown a strong interest in improving or enhancing their standard agents for greater reliability and effect. Their large chemical and biological research and development effort has led them to investigate other kinds of CW agents, particularly the toxins. A bibliography on Soviet research in the toxin field is included in volume II, annex D.

44. The Soviets have supplied selected chemical agents, delivery systems, and training in chemical/biological/radiological warfare to Syria, Vietnam, Laos, Afghanistan, and Egypt. In all cases where chemical warfare has been waged—Yemen, Laos, Kampuchea, and Afghanistan—Soviet advisers and technicians have been directly involved with the forces of their client states, and in Afghanistan the Soviets conducted the chemical attacks themselves.

45. To our knowledge, none of the four countries most recently involved with CW activities—Vietnam, Laos, Kampuchea, and Afghanistan—has any large-

scale facility or organization for the manufacture of chemical and biological materials. Nor are they known to have produced even small quantities of chemical warfare agents or munitions. The technical problems of producing large quantities of weapons-grade toxin, however, are not so great as to prevent any of the four countries from learning to manufacture, purify, and weaponize these materials. It is highly unlikely, however, that they could master these functions without acquiring outside technical know-how. The only country known to be providing chemical warfare assistance to these countries is the Soviet Union. (U)

46. The Soviets have had advisers and technicians working in Vietnam, Laos, and Kampuchea for many years, but not until early 1979 did evidence connect the Soviet military directly with chemical warfare activities. The evidence is quite conclusive. For example, in mid-February 1980, Lao Supreme Headquarters in Vientiane ordered the Southern Region Command in Pakxe to prepare its chemical storage facilities for inspection by unidentified Soviet military personnel. clandestine reports, which provided more detail on the mid-February visit and on another Soviet inspection by chemical warfare experts in June 1980.

47. stated that the chemical section in Xiangkhoang prepared Soviet-manufactured chemical items for inspection by a Soviet military team on 7 February 1979. A seven-man team of Soviet chemical artillery experts, accompanied by Laotian chemical officers, inspected chemical supplies and artillery rounds at the Xeno storage facility on 1 June 1979. One report stated that the Soviet team would be inspecting the same chemical explosives used to suppress the H'Mong resistance in the Phou Bia area. In

The Yemen Experience

48. Additional evidence that the Soviets are prepared to supply toxins and other lethal agents to client states is provided by the Yemen case, which is reassessed in volume II, chapter VI, and summarized here. (U)

49. During the Yemeni civil war (1963-67), Egyptian forces were reported to have used chemical bombs from March to August 1963 against the royalist forces. Both deaths and injuries were reported, but the agent was not identified. During the period October to December 1966, the Egyptians employed a chemical agent that was more persistent and considerably more lethal than any of those previously used. It was never identified conclusively, but was tentatively held to be one of the mustard compounds. Chemical experts conducting postattack on-site observations disputed this view, arguing that if mustard had been used, it was to disguise another agent that caused the deaths.

50. In January 1967 a new agent or combination of agents was dispersed by Soviet-made IL-28 light bombers. The agent was remarkable for its extremely rapid and devastating effect on humans, animals, and vegetation. This material was not identified conclusively either. claims that he clearly identified as a Soviet the dead pilot of a plane shot down after dropping chemical bombs. (U)

51. There are striking similarities between the symptoms described as resulting from the attacks in 1967 and those that have been reported from Southeast Asia and Afghanistan. We cannot positively state that trichothecene toxins were used by the Soviets in Yemen, but that explanation fits the evidence better than any other. Samples that were collected by reputable sources did not reveal any known chemical warfare agents. At that time toxins were not suspected and the special analytic techniques that revealed trichothecene toxins in 1981 were not developed in 1967. (U)

52. There is also a striking similarity between the tactics used in Afghanistan in 1979 and Yemen in 1967 against resistance forces operating from sanctuaries in rugged terrain. The use of the IL-28 bombers in both places is particularly striking and also fits with the descriptions of chemical bomb tests using IL-28s in the USSR in the early 1970s.

CONCLUSIONS

Laos. We conclude from all the evidence that selected Lao and Vietnamese forces, under direct Soviet supervision, have employed lethal trichothecene toxins and other combinations of chemical agents against the H'Mong resistance forces, including their villages, since at least 1976. Thousands have died, have been severely injured, or were driven from their homeland by the use of these agents. (U)

Kampuchea. The evidence strongly supports the conclusion that the Vietnamese have similarly been using lethal trichothecene toxins and other combinations of chemical warfare agents on Democratic Kampuchean forces and other resistance groups since at least 1978. (U)

Afghanistan. We conclude that Soviet forces in Afghanistan have used a wide variety of lethal and nonlethal chemical agents on Mujahedin resistance forces and Afghan villages since the Soviet invasion in December 1979. Afghan Government forces probably used chemical weapons before the Soviet invasion, but we cannot identify the types of agents used. It has not been possible to identify the agents used by the Soviets through sample analysis, but a number of reliable sources have named the agents brought into the country and have described where and when they were used. That information has been correlated with all other evidence, including the reported symptoms. We conclude that nerve agents, phosgene oxime, and various incapacitants, and irritants probably have been used. Other agents and toxic smokes are also available in country, but we cannot state confidently that they have been used. Some of the reported symptoms are consistent with those produced by lethal or sublethal doses of trichothecene toxins, but our evidence is not conclusive.

The Soviet Role. We conclude that the Soviets either provided the toxin weapons directly or provided the toxins for weaponization in Vietnam and Laos. A common practice in the Soviets' own military forces is to store agents in bulk and move them to the field for munitions fill as needed. Our assumption that this practice is also followed in Indochina and Afghanistan is supported by specify that Soviet technicians supervise the shipment, storage, filling, and loading on aircraft of the chemical munitions. The dissemination techniques reported and observed are evidently drawn from years of Soviet chemical warfare testing and experimentation. No intelligence is at hand to support any alternative explanation, but we cannot completely rule out the possibility that Soviet technical assistance has enabled at least the Vietnamese to conduct an indigenous toxin production program.

Motivation for Chemical Weapon Use. In volume II, chapter III, we consider the question of motivation. Is there a military-strategic or tactical rationale for the systematic use of chemical weapons in Laos, Kampuchea, Afghanistan, and Yemen? We conclude that the military problems faced in all four countries—as viewed from the perspective of the Soviets and their allies—make the use of chemical weapons a militarily effective way of breaking the will and resistance of stubborn guerrilla forces operating from relatively inaccessible protected sanctuaries. These weapons offer substantial advantages over conventional weapons. In all four countries the resistance was able through conventional means to frustrate Soviet and client-state objectives of extending and consolidating control over the countries attacked. The Soviets probably reasoned that attainment of these objectives—as quickly and cheaply as possible—justified use of chemical weapons and outweighed a small risk of exposure and international condemnation. They may well have calculated that they and their allies could successfully counter or deny charges that chemical weapons had been used, recognizing that it would be as difficult to compile incontrovertible evidence from Southeast Asia and Afghanistan as it was from Yemen in the 1960s. In addition, the Soviet military very likely consider these

remote areas as providing unique opportunities for the operational testing and evaluation of chemical weapons under various tactical conditions.

We found support for this conclusion from Soviet Military Academy of Chemical Defense in Moscow. three types of chemical agents may be used during the "initial stages" of local wars: "harassing agents (CS, CN, DM), incapacitants such as psychochemicals (BZ) or intertoxins [sic (possibly enterotoxins)], and herbicides." During the "decisive phase, lethal agents can be employed under certain circumstances." In a "local war, chemical weapons can be used to spoil enemy efforts to initiate operations, even if the enemy has not used them first." including detailed descriptions of the Soviet chemical warfare program supports the conclusion that the Soviets consider chemical weapons an effective and acceptable means of warfare even in local conflicts.

IMPLICATIONS

In volume II, chapter III, we consider and reject a number of alternative explanations for the phenomena observed. One hypothesis best fits all the evidence: *the Soviets had begun to weaponize toxins by at least the early 1960s and have used these weapons in Laos and Kampuchea, and possibly in Yemen and Afghanistan.*

If this hypothesis is sustained, it means that the Soviets have gained considerable experience through operational use of biotoxins. If we are correct, the United States and its allies face a new threat not previously considered in intelligence estimates and defense planning.

Furthermore, far more potent toxins than the trichothecene class have been extensively investigated by institutes in the USSR that are linked to chemical and biological weapons development. Indeed, the Soviet military consider the employment of chemical weapons by their forces and those of their allies to be an acceptable and effective means of suppressing resistance even in local wars.

As a result, countries like Thailand, Pakistan, and China may develop an even greater sense of alarm in contemplating conflict with the Soviet Union or its allies. Chinese experts are actively reanalyzing their evidence on Vietnamese use of chemical agents against their forces in 1979. Beyond these considerations, there is growing international concern that lethal chemical weapons may become an accepted method of limited warfare in conflicts throughout the Third World.

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